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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,139	03/06/2007	Shinichiro Yamada	09792909-6492	2702
26263 7590 08/05/2009 SONNENSCHN NATH & ROSENTHAL LLP P.O. BOX 061080 WACKER DRIVE STATION, WILLIS TOWER CHICAGO, IL 60606-1080				
EXAMINER				
LEE, DORIS L				
ART UNIT		PAPER NUMBER		
1796				
MAIL DATE		DELIVERY MODE		
08/05/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/596,139

Applicant(s)

YAMADA ET AL.

Examiner

Doris L. Lee

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 10-23 is/are pending in the application.
- 4a) Of the above claim(s) 13-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 10-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/5508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 9, 2009 has been entered.

Claim Objections

2. **Claim 2** is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The types of polysaccharides listed in claim 2 are broader than the types of polysaccharides claimed in claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-7 and 10-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yamada et al (JP 2003-192925, see English language equivalent**

2005/0143502 in view of **Yoshida (US 2002/0151631)** and **Tokiwa et al (US 2003/0079654)**.

Regarding claim 1, Yamada teaches a resin composition ([0002]) comprising:

- at least one biodegradable polysaccharide ([0030])
- a flame retardant additive containing a hydroxide ([0043])
- and a hydrolysis suppressing agent suppressing the hydrolysis of said at least one polysaccharide ([0049]).

Yamada teaches that a nitrogen flame retardant compound can be used in the composition; however, Yamada fails to teach the addition of a nitrogen oxide compound. Yamada also fails to teach that the biodegradable polysaccharide contains at least one of acetyl cellulose and esterified starch.

Yoshida teaches a resin composition ([0008]) which has a metal hydroxide component which may be aluminum hydroxide, magnesium hydroxide, or calcium hydroxide ([0018]) which incorporates a nitrogen oxide composition ([0009]).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the nitrogen oxide compounds of Yoshida in the composition of Yamada. One would have been motivated to in order to have excellent flame retardancy at a low amount of addition to the resin without degrading various properties of such resin and a low production of combustion residue when such resin of so is combusted for disposal (Yoshida, [0007]). They are combinable because they are both concerned with the same field of endeavor, namely resins with metal hydroxides as

flame retardants. Absent objective evidence to the contrary and based upon the teachings of the prior art, there would have been a reasonable expectation of success.

Tokiwa teaches that acetyl cellulose is a known biodegradable resin ([0034]).

As acetyl cellulose was a well known biodegradable resin at the time of the invention, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the acetyl cellulose of Tokiwa as the biodegradable polysaccharide of Yamada. Case law holds that the selection of a known material based on its suitability for its intended use supports prima facie obviousness. *Sinclair & Carroll Co vs. Interchemical Corp.*, 325 US 327, 65 USPQ 297 (1045).

Regarding claim 2, Yamada teaches that the polysaccharide is cellulose, starch, chitosan, dextran and derivatives thereof and copolymers comprising one of them ([0032]).

Regarding claim 3, Yamada teaches that the said hydroxide includes at least one metal hydroxide ([0038]).

Regarding claim 4, Yamada teaches that the metal hydroxide is aluminum hydroxide, magnesium hydroxide or calcium hydroxide ([0038]).

Regarding claim 5, Yamada teaches that the hydroxide has a purity of not less than 99.5% ([0045]).

Regarding claim 6, Yamada teaches that said hydroxide is in the form of particles with a BET specific surface area not higher than 5.0 m²/g ([0047]).

Regarding claim 7, Yamada teaches that said hydroxide has an average particle size not higher than 100 microns ([0046]).

Regarding claim 10, modified Yamada teaches that the nitrogen oxide is a non-metallic nitric acid compound and/or a non-metallic nitrous acid compound (Yoshida, [0012]).

Regarding claim 11, modified Yamada teaches that the average particle size of said nitrogen compound is not larger than 100 microns (Yoshida, [0011]).

Regarding claim 12, Yamada teaches that the hydrolysis suppressing agent is a carbodiimide compound, and isocyanate compound or an oxazoline compound ([0050]).

Response to Arguments

5. The terminal disclaimer filed on June 6, 2009 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 10/596,114 has been reviewed and is accepted. The terminal disclaimer has been recorded and the outstanding obviousness-type double patenting rejections are withdrawn.

6. Applicant's arguments filed June 6, 2009 have been fully considered but they are not persuasive for the reasons set forth below:

7. **Applicant's argument:** The data in Table 2 of the specification shows an unexpected, and better flame retardancy than the prior art composition.

Examiner's response: *Although the inventive examples do show better flame retardancy over the comparative examples, it is noted that the data is not commensurate in scope with the claimed invention. It is noted that the claimed invention does not claim any ranges for the amounts of the ingredients, and the data does not provide enough information to show that the unexpected results are apparent*

throughout the whole scope of the claim. For example, is the UCL94C-1 flame retardancy still apparent if component (B), the hydrolysis suppressing agent, component (C1), the aluminum hydroxide and component (A2), the ammonium nitrate are all present in the composition at less than 1 part by weight? Also, the independent claim broadly claims a hydroxide flame retardant and a nitrogen oxide compound, however, there is no data presented for the other hydroxides listed in the dependent claims (the magnesium hydroxide or the calcium hydroxide) nor is data present for any other nitrogen oxide compound besides ammonium nitrate. Thus, unexpected results of the improved flame retardancy over the whole scope of the claimed invention cannot be convincingly determined.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Doris L. Lee whose telephone number is (571)270-3872. The examiner can normally be reached on Monday - Thursday 7:30 am to 5 pm and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Doris L Lee/
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796